THE EFFECT OF THE WAR ON THE SOUTH VIETNAMESE ECONOMY

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THESIS

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ABSTRACT

This paper investigates the effect of the war on the South Vietnamese economy for the period 1957-1967. For this purpose the economy is divided into five independent sectors: the war effort, the agricultural output, the industrial output, the transportation capacity, and government non-defense expenditures. Each of these sectors is expressed as a linear function of specific political and economic variables of interest and a multiple stepwise regression analysis performed to determine the effect of these specific variables on the individual economic sectors.

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I. SUMMARY

The purpose of the study reported in this thesis was to examine the effects of specific political and economic variables on the economy of South Vietnam for the period 1957 through 1967. For this purpose a model of the South Vietnamese economy was developed in which the economy is represented by five independent sectors: the war effort, agriculture, industry, transportation, and government non-defense services.

In particular, each sector is expressed as a linear function of specific political and economic variables. The single variable representing the political stability was obtained by assigning a numerical value to political events and taking the annual algebraic summation of these values as representative of the political stability of South Vietnam. Each of the economic sectors and the remaining economic variables were represented by annual values obtained from recorded statistics.

To analyze the effect of these political and economic variables on the individual economic sectors, the technique of stepwise multiple regression was used for the eleven years of interest. This analysis was performed on a computer and allowed the computer to select the variables to be included in the regression using a decision rule based on the degree of correlation between the independent and dependent variables.

The results of the analysis for this model indicate that the industrial, transportation, war effort, and government non-defense services

sectors of the South Vietnamese economy have been significantly affected by the war. Only the agricultural sector appears to have remained virtually unaffected by the war during the years 1957 through 1967. In particular, these results suggest the large scale dependence of the Vietnamese economy on the military conflict and presence of the United States in Southeast Asia.

II. INTRODUCTION

Vietnam has become more than a small country in Southeast Asia. The events of the past decade have made Vietnam a symbol of a new kind of American involvement in world affairs and a focus for divisions in American society. Numerous articles and books have appeared analyzing the war and the political and military strategies of the participants, yet, one issue has received scant notice. Relatively few people have shown interest in the effects of the events of the past decade on the South Vietnamese economy. However, the effect of the war and other political and economic factors on the economy is of paramount concern to the future of Vietnam and the future policies and influence of the United States in Southeast Asia.[1]

Recognizing the importance of these factors on the economy, this paper examines the economy of South Vietnam for the period 1957 through 1967 to determine the existence of any statistically significant linear relationships between specific political and economic variables and individual economic sectors.

Initially, in Chapter III, the paper traces the historical antecedents for the period 1957 through 1967 and the rationale and objectives of the participants in the Vietnam conflict. A brief description of the

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[1] Lilienthal, D. E., "Postwar Development in Vietnam," Foreign Affairs, v. 47, p. 321-333, January, 1969.

South Vietnamese economy as it existed in the years immediately following the partition of the country and the economic characteristics and development during the years 1957 through 1967 are described in Chapter IV. Chapters V and VI proceed with the rationale used in constructing the mathematical model of the economy and the method of analysis used to obtain the results and conclusions contained in Chapters VII and VIII respectively. Chapter VIII also presents suggested extensions for investigating the effect of the war on the South Vietnamese economy and requirements for future research in this area. Appendices contain the data utilized in this study.

III. HISTORICAL ANTECEDENTS

As evidenced by the events of the past five years, Vietnam is unquestionably the transcendent problem that confronts the United States. Although troop commitment on the part of the United States has decreased, the United States is still inexorably embroiled in Southeast Asia and is finding it extremely difficult to withdraw from this complex engagement.

To obtain a clear understanding of the complexities associated with the Vietnam conflict, it is necessary to examine the beliefs and objectives of the war's participants.

The Communist objective in South Vietnam throughout the course of the war has been and remains the overthrow of any western dominated government in Saigon. The Communist proclaimed justifications for their actions can be reduced to three basic reasons:

(1) the artificial division of the country at the 17th Parallel was from a Communist view legally and morally invalid after 1956

(2) the Communist led war for independence was supported by a large majority of the people

(3) the Communist led Vietnamese won that war for independence.[2]

It is true that the division of Vietnam has its only legal basis in the Geneva Conference of 1954, and at that conference it was explicitly

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[2]White, R. K., "Misperception and the Vietnam War," Journal of Social Issues, v. 22, p. 31-36, July, 1966.

agreed that the division of the country would last only two years. In fact, the Communist-led Viet Minh stopped fighting on the basis of what seemed to be a firm agreement that there would be an all-Vietnamese vote in 1956 (which they fully expected to win) that would unify the country, establishing both unity and full independence without further bloodshed. Unfortunately, in 1956 Ngo Diem refused to permit these elections that had been provided for by the Geneva Agreement. With Diem's decision not to press for a plebiscite under international supervision even in "his own" southern half of the country, he forfeited -- at least in Communist eyes -- not only all claim to the kind of legitimacy that genuine popular endorsement would have provided, but also claim to invoke the Geneva Conference's endorsement of the 17th Parallel as a basis for his own rule in the South. Furthermore, the Communists claim that in the years between 1950 and 1954, when the United States was supplying money and arms on a large scale to the French, the French were fighting against a clear majority of the Vietnamese people. It is difficult to escape the conclusion from a Communist viewpoint that the United States was committing agression in Vietnam from 1950 to 1954. The United States was financing the use of force on land that did not "belong" to them -- or to the French -- by any criterion that they would now accept, and they were doing it against what now clearly seems to have been a majority of the Vietnamese people. Lastly, the Vietnamese Communists and the many non-Communists who had fought with them had every reason to feel in 1954 that the prize for

which they had struggled and sacrificed through nine years of war was finally theirs: a unified, independent country. When Diem blandly claimed that he was not bound by the decisions at Geneva, a full half of the prize the Communists felt they had fairly won was snatched from them.

At the time of the initial large scale United States personnel commitment to South Vietnam, it was apparent that United States policy was solely concerned with intervention to help a new and small nation resist subjugation by a neighboring country--a neighboring country, incidentally, which was being assisted by the resources of the world's two largest Communist powers. Reason dictated that the fate averted in Korea through American and United Nations military force would overtake the independent countries of Asia, albeit in somewhat subtler form, were the United States to stand aside while the Communist North sponsored subversion and terrorism in South Vietnam. At this point it can be logically accepted that the goals of the United States in thwarting the "domino theory" were largely in accord with the expressed desire of the recognized South Vietnamese government. South Vietnam was in jeopardy of being taken over by Communist forces and welcomed the substantial increase of men and material that occurred in 1965. With this substantial commitment, the optimism of both United States and South Vietnamese military and government officials with regard to the conduct of the war, together with the encouragement of other Asian allies, confirmed the United States' belief in the correctness of their policy.

However, as the war progressed with escalation on both sides and a seeming lack of a clear cut plan for military victory, it became readily apparent in late 1967 that the Asian allies of South Vietnam and the United States had lost considerable interest in the war in South Vietnam. Attempts by the United States to prod greater commitment from their allies produced dismal results. Furthermore, the bombing of North Vietnam and increased United States' troop and supply commitment had produced only greater escalation and placed a greater burden on the United States in terms of man and dollar commitment. This "reaction" or "hawk" policy of the participants in the conflict, where escalation provoked greater escalation, can be easily demonstrated by means of simple linear functions that approximate the behavior of both South Vietnam and the allies and North Vietnam.[3] Letting the following represent the war effort of South Vietnam:

$$(1) \qquad WE_{sv} = we_{sv} + r_{sv} WE_{nv}$$

where

WE_{sv} = the war effort of South Vietnam and the allies in terms of committed manpower

we_{sv} = the minimal amount of South Vietnamese and allied war effort provided, regardless of other variables

r_{sv} = the reaction coefficient of South Vietnam and the Allies that reflects the relationship between the war effort of North Vietnam and that of South Vietnam and the allies

WE_{nv} = the war effort of North Vietnam in terms of committed manpower

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[3] Boulding, K. E., "THE PARAMETERS OF POLITICS," University of Illinois Bulletin, p. 12, University of Illinois, July, 1966.

and

$$(2) \qquad WE_{nv} = we_{nv} + r_{nv} WE_{sv}$$

represent the war effort of North Vietnam where

WE_{nv} = the war effort of North Vietnam in terms of committed manpower

we_{nv} = the minimal amount of North Vietnamese war effort provided, regardless of other variables

r_{nv} = the reaction coefficient of North Vietnam that reflects the relationship between the war effort of South Vietnam and the allies and that of North Vietnam

WE_{sv} = the war effort of South Vietnam in terms of committed manpower

it can be seen that an equilibrium solution for WE_{sv} exists when

$$(3) \qquad WE_{sv} = \frac{we_{sv} + r_{sv} we_{nv}}{1 - r_{sv} r_{nv}}$$

With the knowledge of the goals and objectives of both participants, it is justifiable to hypothesize that an increase in the reaction coefficient of either party only serves to provoke a greater WE_{sv} and consequently an escalation in the war. Moreover, if the proposition that an upper bound exists for the war effort of both participants is accepted, it can be graphically illustrated (see Appendix L) that North Vietnam can easily adjust its reaction coefficient in accord with its guerrilla tactics to escalate and deescalate the war at will and thereby extend the war indefinitely without reception of a clear cut military defeat.

Because of this ability of North Vietnam, present United States and South Vietnamese war objectives appear to be primarily

concerned with the stabilization of the present South Vietnamese government and military forces. The United States, faced with domestic turmoil, can ill afford to continue the massive war effort of the past five years. With the current program of "Vietnamization," major efforts are being made to reduce and redirect the United States commitment of men and material. Although a decisive military victory has not been achieved, the United States appears satisfied that the initial cause for intervention, fear of a Communist takeover in South Vietnam, has been eliminated. Just how strongly this United States objective coincides with that of the South Vietnamese government remains to be seen. Although the present South Vietnamese government appears to have a strong political and military power base from which to operate, it remains unknown exactly how it will operate in the absence of a large United States military presence.

Moreover, it is doubtful that the Communists will relinquish their original goal of assuming power in South Vietnam. Badly mauled and decimated by superior Allied firepower, the Communists have been unable to obtain a decisive military victory as was the case against the French. They appear content to prolong the war as long as necessary, moving freely from escalation to deescalation as the situation requires.

IV. THE SOUTH VIETNAMESE ECONOMY

With this present status of the war, it is imperative that the economy of South Vietnam become a viable and self sustaining mechanism.[4] Moreover, the South Vietnamese economy presents itself as a welcome operative into which future United States aid may be directed without the manpower commitment required for the military effort.

To begin such an effort, however, an understanding is necessary of the South Vietnamese economy both prior to the war and as it exists today.

Prior to the large scale United States military commitment to Vietnam in 1965 and the subsequent intensification of the war, the economy of South Vietnam was almost entirely dependent on agriculture; in fact, United Nations 1959 statistics[5] showed that a little under one third of the gross domestic product was furnished by agriculture and fisheries. Predominant agricultural products were rice and rubber and comprised between 85 and 92 per cent of the South Vietnamese exports from 1956 to 1964. Other important crops including maize, sugar, fats and oils, tobacco, coffee and tea also formed part of the agricultural

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[4] Lilienthal, p. 321.

[5] United Nations, Toward the Economic Development of the Republic of Vietnam, p. 43, United Nations, 1959.

contribution to the national income, though on a smaller scale. Yet another important agricultural asset of the South Vietnamese economy were the forests. About one-third of the land area was under a forest cover that provided a source of building materials, secondary forest products, and, potentially, of industrial products which until that time had been imported.

In regard to industry, the partition of Vietnam in 1954 left the tobacco, alcohol, soft drink, match, and sugar industries in the South. In addition, some new light industries -- paper, glass, textiles, and cement -- were created in the South to fill the vacuum caused by the termination of trade with the North. Because the country did not appear to have the resources necessary for massive industrial development, efforts to promote industry were based on a clear understanding of the agricultural basis of the economy. Consequently, the most promising light industries appeared to be those that processed local agricultural and forest products.

Prior to the current war, national income figures showed that commerce was an important element of the gross domestic product ranking just behind agriculture and fisheries. Although a United Nations study[6] claimed that port facilities, road networks, and inland waterways could be described as distinctly good, there was evidence of decay in the nation's transportation network. Inland waterway transport was a

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[6] Ibid, p. 63.

vital element of the transport system, yet, due to lack of maintenance, inland waterways had silted up considerably and many junks had fallen into disrepair. Rail traffic was also in jeopardy due to maintenance problems and it was considered imperative to improve and repair the national highways in order to decrease the high cost of transportation.

With respect to manpower, the Vietnamese economy was marked by a chronically inadequate utilization of manpower resources. In normal times, this took the form of under employment and low productivity of labor rather than that of outright unemployment. In addition, the labor force was in general poorly educated and lacked useful skills. Moreover, as a result of the war with the French, many rural Vietnamese had left their farms to seek refuge in the cities and towns, particularly Saigon. This created a refugee problem of considerable consequence with resultant problems existing in housing, health, welfare, and education. Government and other social programs had considerable distances to travel before these obstacles could be considered as overcome.

It is difficult to make a true assessment of the South Vietnamese economy at this time. Certainly, some sectors of the economy have boomed due to massive United States aid but others have declined badly and show little hope of making a strong revival.

Agricultural production in the South, a mainstay of the economy, has been hurt by the increased intensity of the war. Whereas, rice production probably reached five million tons by 1963, it has subsequently

declined, and increased imports of rice have been required. Hopeful observers, however, point to signs that possibly forecast a dramatic comeback in rice production. This expected comeback is due primarily to mechanization which has enabled several thousand farmers in the Mekong delta to double their output of rice and vegetables. Rubber production, however, has been hurt badly by the exodus of French personnel and the intensity of the war. Most of the rubber plantations have been destroyed or badly neglected and in the minds of many economists should only be rehabilitated and expanded if the declining market for Vietnamese rubber stages a strong reversal.[7]

Industrial production in the South has floundered. Prior to the war, attempts had been made to create new industries dependent on forestry and agricultural products. Due to the intensity of the war, these efforts have met with only limited success. Consequently, the country has continued to be dependent on those consumer-oriented industries that were left by the partition in 1954. An exception to this is the textile industry which has become the single biggest industry even though textile imports increased tenfold between 1966 and 1968. Shops, restaurants, hotels, real estate interests, construction, and other service industries have boomed, yet will undoubtedly suffer severe losses as the American troop commitment declines.

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[7] Haviland, H. F. Jr., Vietnam After the War: Peacekeeping and Rehabilitation, p. 8-26, Brookings Institution, 1968.

The transportation system of South Vietnam is creaking badly. The average truck has only a life expectancy of 10,000 miles due to the poor condition of highways. Approximately 70 per cent of the railway system is out of business even though the amount of cargo shipped has increased in the period from 1964 to 1967.[8] Inland waterways have continued to decline due to lack of proper maintenance. Exceptions to this dismal picture are the excellent port facilities and airfields which have been constructed for military purposes. Conversion to non-military use should be a fairly easy task, thus providing important assets to bolster the South Vietnamese economy.

The manpower problem continues to be one of the most serious problems confronting the economy of South Vietnam. Refugees have left the farms en masse and moved to the relative security of the cities. This has created unemployment problems and has considerably strained the available health and educational resources. Inadequate methods of food distribution and a lack of sufficient housing have compounded the problem and have resulted in the economic dependence of a large segment of the population on government welfare.

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[8] Anon., "Vietnam's Other War," Business Week, p. 107, Sept. 23, 1967.

V. THE MODEL

In formulating a model of the South Vietnamese economy, it is practical to view the economy as comprised of five independent sectors, each expressed as a function of particular political and economic variables of interest. The sectors selected as comprising the total economy are:

1., war effort
2., agriculture
3., industry
4., transportation
5., government non-defense services

The rationale employed in partitioning the economy of South Vietnam in this manner is rather practical and straightforward. Given the historical economic composition of South Vietnam, the agricultural output, industrial output, and transportation capacity are selected as measures to represent the traditional leading economic sectors of South Vietnam -- agriculture, industry, and commerce. The remaining two sectors are selected in the following manner. During the period of interest to this paper, South Vietnam experienced almost continuous warfare marked by substantial increases in the magnitude and intensity of the conflict. Because of the prolonged duration of the conflict, the survival of South Vietnam as a nation state and an economic entity became interlinked with the ability and capacity of the government to mount a successful war effort. Likewise, due in part to the events of this period, the government was forced to assume a more active and more extensive role in

providing a greater amount of services to its citizens. Improvements in such diverse areas as education, medical care, housing, refugee resettlement, etc., were only some of the necessary requirements placed on the government. Therefore, because of these circumstances the war effort and the non-defense government services are viewed as representing vitally important segments of the South Vietnamese economy.

A. WAR EFFORT

For the purpose of this paper, the war effort of South Vietnam is expressed in terms of direct manpower commitment to the war and is interpreted to be synonymous with the size of the Army of the Republic of Vietnam (this information can be found in Appendix A). Only the ARVN is considered vice other military services because of the relative size of the other services and their relative value to the defense posture of South Vietnam. Moreover, in accord with the formulation of independent sectors, the manpower utilized in the Regional and Popular Forces are also disregarded because of their militia or quasi-military status and their subsequent contributions to other sectors of the economy.

Since one of the expressed purposes of this paper is to examine the effect of a political variable on individual economic sectors, it is necessary to formulate a measure to represent the political stability of South Vietnam. This is accomplished in the following manner. For each of the years in question an analysis is made, using the New York Times Index as a reference, to determine the number and type of politically

significant events occurring in South Vietnam. The Index is used for this purpose because it reports only major political occurrences, thereby reducing a priori the universal set of politically significant events. Events ranging from coup d'etats and assassinations to student riots and arrests of prominent Buddhists are examined to ascertain their political importance (Appendix B contains a listing of these significant events). Having identified these events, each event is assigned a value of +1.0 if the event apparently strengthened the position of the government or a -1.0 if the event implied a deterioration of the government's position. Equal weighting is accomplished by taking the algebraic sum of values for each year and is used because of the seeming impossibility of determining whether the long or short term political significance of one event would outweigh the political significance of another.

Having established these units of measure, the war effort is expressed as follows:

(1) $$WE_{sv} = B_o + B_1 P_{sv} + B_2 WE_{nv} + B_3 WE_{us} + B_4 NWE_{us}$$

where:

WE_{sv} = the war effort of South Vietnam measured in terms of committed manpower

P_{sv} = the political stability of South Vietnam

WE_{nv} = the war effort of North Vietnam measured in terms of committed manpower

WE_{us} = the war effort of the United States measured in terms of committed manpower

NWE_{us} = the non-war effort of the United States measured in terms of economic aid expressed in United States dollars.

These specific variables are included to determine if a linear relationship exists between the political and military situation in South Vietnam and the nation's ability to mount a significant defense effort.

In particular, the political stability of South Vietnam is included as an independent variable to determine if the often chaotic political atmosphere has any statistical effect on the nation's war effort.

The war efforts of North Vietnam and the United States are also included as independent variables to determine whether the size of the Communist forces operating in the South and the number of United States personnel committed has any statistically significant effect on the South Vietnamese war effort (listings of the North Vietnamese and United States war efforts can be found in Appendices C and D respectively).

Lastly, the non-war effort of the United States is included to ascertain the effect of the massive amount of United States supplied economic aid on the South Vietnamese war effort (this data can be found in Appendix E). This is of interest because it is felt that the ability of the South Vietnamese government to conscript workers for military service is dependent on the amount of economic aid received from outside sources, primarily the United States. Without such aid, significant South Vietnamese mobilization is believed impossible.

B. SOUTH VIETNAMESE AGRICULTURAL OUTPUT

An investigation of the South Vietnamese agricultural output necessitates the formulation of a single quantitative measure of the total

annual South Vietnamese agricultural output. This is accomplished by selecting those crops, livestock, and timber production of primary importance to the South Vietnamese economy. This type of data, measured in such non-commensurable units as metric tons, thousands of head, etc., is readily available in the United Nations Statistical Yearbooks of Asia and the Far East and in the Vietnam Statistical Yearbooks published by the Bureau of Statistics in Saigon. The method used to combine these non-commensurable terms into a singular quantitative measure is to convert each item into its monetary worth for each specific year. Problems arise, however, in attempting to determine the South Vietnamese prices for specific crops and other items during the period of interest. Because of this, resort is made to the use of New York wholesale prices for the items and years in question. Whereas, some of these prices are undoubtedly inflated due to various economic price barriers, it is felt that the inflation can be largely disregarded since as seen below the total value of the agricultural output is structured as dependent on the amount of United States economic aid. Overpricing the worth of the agricultural sector is thus more desirable than underpricing in order to attain a more reasonable perspective with this particular independent variable.

Having attained the worth of specific agricultural items in United States dollars, the values are combined to yield a singular dollar value representative of the annual South Vietnamese agricultural output for the

years in question (the data used for this measure can be found in Appendix F). This method thus permits the agricultural sector to be expressed as follows:

$$(2) \quad A_{sv} = B_o + B_1 P_{sv} + B_2 WE_{nv} + B_3 WE_{us} + B_4 NWE_{us} + B_5 L_{av} + B_6 BT_{sv}$$

where:

A_{sv} = the value of the agricultural output of South Vietnam measured in United States dollars

P_{sv} = the political stability of South Vietnam

WE_{nv} = the war effort of North Vietnam measured in terms of committed manpower

WE_{us} = the war effort of the United States measured in terms of committed manpower

NWE_{us} = the non-war effort of the United States measured in terms of economic aid expressed in United States dollars

L_{sv} = the amount of arable land in South Vietnam measured in terms of hectares

BT_{sv} = the balance of trade of South Vietnam measured in United States dollars.

For reasons similar to those used in the analysis of the South Vietnamese war effort, the political stability, war efforts of North Vietnam and the United States, and the amount of United States supplied economic aid are included as independent variables in the agricultural output sector. In addition, the amount of annually available arable land is included to determine if the amount of cultivated land has any relationship with the amount of agricultural output (the amount of arable land for the years in question is listed in Appendix G). In particular, it is felt that the establishment of a significant relationship between this variable

and this sector might signify advances in agricultural technology. Lastly, the annual balance of trade for South Vietnam expressed in U. S. dollars is included in this equation to establish a relationship between the overall strength of the economy as measured by the balance of trade and the prime contributing sector of the economy-agriculture (the balance of trade data used in this analysis is listed in Appendix H).

C. INDUSTRY OF SOUTH VIETNAM

With respect to the industrial output sector of the economy, a situation exists similar to that experienced in the agricultural sector. A common quantitative measure is again required and developed by selecting the leading industries of South Vietnam and converting their output expressed in such non-commensurable units as metric tons, barrels, etc., to a dollar value. This method is used again due to the complete unavailability of South Vietnamese prices for the products in question. Thus, resort is made to the New York wholesale prices for the products and years of interest. Once again inflated prices are undoubtedly used but the logic used in the agricultural sector prevails thus permitting their use. Having made these unit conversions for each industrially important product, the values obtained are combined to form an annual value of the industrial output (this data is located in Appendix I) thus permitting the industrial sector to be expressed by the following linear equation:

$$(3) \quad I_{sv} = B_o + B_1 P_{sv} + B_2 WE_{nv} + B_3 WE_{us} + B_4 NWE_{us} + B_5 BT_{sv}$$

where:

I_{sv} = the industrial output of South Vietnam measured in terms of United States dollar value

P_{sv} = the political stability of South Vietnam

WE_{nv} = the war effort of North Vietnam measured in terms of committed manpower

WE_{us} = the war effort of the United States measured in terms of committed manpower

NWE_{us} = the non-war effort of the United States measured in terms of economic aid expressed in United States dollars

BT_{sv} = the balance of trade of South Vietnam measured in United States dollars.

As in previous sectors the political stability, the war efforts of North Vietnam and the United States, the amount of United States supplied economic aid, and the balance of trade terms are included in this equation to determine the existence of statistically significant relationships between these variables and the industrial sector. Of particular interest is the determination of relationships between the quantity of industrial output and the amount of United States supplied economic aid and the South Vietnamese balance of trade. It is felt that the establishment of a statistically significant relationship between the industrial output and the amount of United States supplied economic aid might indicate worthwhile results of the U. S. economic aid program and further channels for U. S. commitment. Likewise, the establishment of a significant relationship between the industrial output and the balance of trade might indicate an improved status for South Vietnamese industry with respect to the strength of the entire economy.

D. TRANSPORTATION CAPACITY OF SOUTH VIETNAM

As explained in the introduction, the transportation system of South Vietnam is composed of several elements -- railroads, highways, inland waterways, and air traffic. In formulating an effective single measure of this rather diversified sector, the following problem developed. A lack of sufficient data is available to determine the actual capacity of the system for the period of this analysis, where the capacity of the system is interpreted as the amount of cargo or number of passengers transported per annum. Existing data as provided by the Bureau of Statistics in Saigon,[9] however, only records the amount of cargo and number of passengers transported via air and rail with no mention made of highway or inland waterway traffic. Since the amount of air and rail traffic is judged as inconsequential for the years in question as compared to the traffic moved on the highway infrastructure and inland waterway system, the use of this data would provide a biased and incorrect portrayal of the South Vietnamese transportation capacity. Thus, resort is made to ascertain the total number of motor vehicles, military and civilian, present and in use within the system for each of the years relevant to this analysis (this information is provided in Appendix J). The use of this data as a measure of the actual capacity of the transportation system appears correct using the following logic. Unquestionably, the use of the motor vehicle assumed a more important role in the

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[9] Vietnam Statistical Yearbooks, Bureau of Statistics, Saigon, 1957-1967.

commerce of South Vietnam during the years relevant to this study. As the use of railroads and the inland waterway system diminished as a result of the war and disrepair, the average South Vietnamese citizen became increasingly dependent on the use of the motor vehicle for transportation. Although air traffic has increased dramatically, the accessibility and quantity of air service continued to limit its function to that of a second rate component. Thus, by determining the total number of motor vehicles present and in use within South Vietnam, the following linear equation is formulated for the transportation sector:

$$(4) \quad T_{sv} = B_o + B_1 P_{sv} + B_2 WE_{nv} + B_3 WE_{us} + B_4 NWE_{us}$$

where:

T_{sv} = the transportation capacity of South Vietnam measured by the number of motor vehicles present and in use

P_{sv} = the political stability of South Vietnam

WE_{nv} = the war effort of North Vietnam measured in terms of committed manpower

WE_{us} = the war effort of the United States measured in terms of committed manpower

NWE_{us} = the non-war effort of the United States measured in terms of economic aid expressed in United States dollars.

Once again the political stability of South Vietnam, the war efforts of North Vietnam and the United States and the amount of United States supplied economic aid are utilized as independent variables. Of prime interest, however, is the determination of statistically significant relationships between this sector and the war efforts of North Vietnam

and the United States. Establishment of such relationships might well be construed as support for the findings of the Lilienthal study which saw an improved internal commercial transportation system as a result of the war.[10]

E. NON-DEFENSE GOVERNMENTAL EXPENDITURES

As a result of the political, military, and social events that occurred in South Vietnam during the years of interest to this study, a large and rather complex governmental infrastructure developed. Of particular interest, however, is not the expanding size of the government but rather the enlarged role of the government in the life of the average citizen. Although the war has proven an economic success to some South Vietnamese, many have experienced unparalleled hardships. This fact coupled with a growing awareness of the comforts and standard of living enjoyed by their war time Allies, notably the Americans, has increased the demands placed on the government by its citizens. These demands have taken the form of extensive relief for war victims and refugees, improved housing and medical care, and improvements in the quantity and quality of education. In establishing a quantitative measure of this expanding governmental social activity, use is made of existing data of the amount of governmental non-defense expenditures, expressed in piastres, directed to the domestic welfare of South Vietnam (this

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[10] Lilienthal, p. 325-326.

data can be found in Appendix K). This permits the formulation of the following linear equation representing the non-defense activities of the South Vietnamese government:

$$(5) \quad S_{sv} = B_o + B_1 P_{sv} + B_2 WE_{nv} + B_3 WE_{us} + B_4 NWE_{us}$$

where:

S_{sv} = the total amount of South Vietnamese non-defense government expenditures expressed in piastres

P_{sv} = the political stability of South Vietnam

WE_{nv} = the war effort of North Vietnam expressed in terms of committed manpower

WE_{us} = the war effort of the United States expressed in terms of committed manpower

NWE_{us} = the non-war effort of the United States measured in terms of economic aid expressed in United States dollars.

As in the formulation of equations for the other economic sectors the political stability, the war efforts of North Vietnam and the United States, and the amount of United States supplied economic aid are included in the analysis of this sector. Of particular interest, however, is the determination of a relationship between the amount of governmental non-defense spending and the political stability of the government. This is of interest because it is believed that the ability of the government to expand and provide increased services to its citizens is interwoven with its ability to maintain a politically stable base from which to operate. Of secondary interest is the determination of a relationship between this sector and the war effort of North Vietnam, for it is

hypothesized that the war effort of South Vietnam has a causal effect not only on the war effort of South Vietnam but also on the amount of governmental non-defense expenditures.

VI. METHOD OF ANALYSIS

This chapter describes the method of analysis used in investigating the preceding linear model of the South Vietnamese economy. The analysis consists of two related steps, the first of which is always performed.

A. STEP 1 OF THE ANALYSIS

The first step employed to determine the significance of selected variables on individual economic sectors consists of multiple stepwise regression analysis using data for each of the eleven years in question and the equations formulated above. Each of these equations is of the form $Y = B_o + B_1X_1 + B_2X_2 + \ldots + B_nX_n + E$, where the regression coefficient B_i for each independent variable X_i indicates the relationship of that independent variable to the dependent variable Y under the assumption that other independent variables in the equation are held constant. This type of regression analysis is often called stepwise regression, but it is really repeated multiple regression with a decision rule for the selection of the next variable to be included in the regression. In this analysis the program is free to select the independent variable to enter into the regression. The first variable used as an independent variable is that variable which has the highest correlation with the dependent variable. The second variable brought into the regression is that which has the highest partial correlation with the dependent variable

after allowing for the predictive ability of the first independent variable. Moreover, 0.01 is the proportion of the sum of squares used to limit the entering of variables into the regression. Unless the proportion of the sum of squares attributable to an entering variable is greater than this value, the variable is not entered.

The results of this analysis are presented in the following format. An F value for each step of the analysis is provided to indicate the goodness of fit of the regression plane. This F value makes possible the testing of the following hypothesis:

$$H_o: \quad B_o = B_1 = B_2 = \ldots = B_n = 0$$

$$H_1: \quad B_o \neq B_1 \neq B_2 \neq \ldots \neq B_n \neq 0$$

It can be shown[11] that such estimates follow an F distribution with r and n-p degress of freedom where:

r = the number of independent variables

n = the number of observations

p = the number of unknown parameters, B_i.

Rejection of the null hypothesis, H_o, occurs if $F > F_{\alpha\,(r,n-p)}$. This in effect indicates the existence of a linear relationship between the dependent variable Y and at least one of the independent variables, X_i.

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[11] Mood, A. M. and Graybill, F. A., Introduction to the Theory of Statistics, p. 353-355, McGraw-Hill Co., 1963.

Computed t values are also produced using this type of analysis to precisely identify the independent variables of significance in the regression. This identification process takes the form of testing the following null hypothesis:

$$H_o: B_i = 0 \qquad i = 1, \ldots, r,$$

against the alternative:

$$H_1: B_i \neq 0 \qquad i = 1, \ldots, r.$$

The appropriate test statistic for this identification has been shown to be the t statistic[12] where rejection of the null hypothesis occurs if

$$t \geq t_{(1-\alpha/2)(n-p)},$$

or if

$$t \leq -t_{(1-\alpha/2)(n-p)}.$$

Rejection of the null hypothesis for specific coefficients indicates the existence of a linear relationship between the dependent variable Y and independent variable associated with that specific coefficient.

Furthermore, this method also produces a value for the coefficient of multiple correlation that supports the results of the aforementioned F statistic. A relatively high value for this coefficient indicates in general the existence of a relationship between the dependent variable Y and at least one of the independent variables X_i, whereas a low value implies no such relationship.

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[12] Ostle, B., Statistics in Research, p. 174, Iowa State University Press, 1963.

In addition, a correlation matrix is computed and is composed of the correlation coefficients of individual pairs of variables assuming other variables are held constant.

B. STEP 2 OF THE ANALYSIS

The second step of the data analysis is performed only when high values appear in the correlation matrix between the dependent variable and an independent variable.

When the computed F and t statistics prove statistically insignificant in the stepwise regression analysis, attention is focused on the values of the correlation matrix. The existence of relatively high correlation values between the dependent and individual independent variables is interpreted as indicating possible statistically significant linear relationships. To investigate these possible relationships, the stepwise multiple regression is repeated. However, this time the independent variables under investigation are forced into the regression to determine if this procedure would result in the establishment of any significant statistical relationships.

VII. RESULTS

The preceding analysis was performed using the computer routine for stepwise multiple regression analysis (STEPR) as found in STATLIB of the U. S. Naval Postgraduate School Computer Center. This chapter presents the results of this analysis and in Tables I through X presents that portion of data pertinent to this paper.

A. WAR EFFORT OF SOUTH VIETNAM

The initial analytical results for the war effort sector reveal the existence of a linear relationship between the committed manpower of South Vietnam and at least one of the following independent variables -- the political stability of South Vietnam, the committed manpower of North Vietnam, the committed manpower of the United States, and the amount of United States economic aid. The computed F value for the analysis is 71.965 which is highly significant at the $\alpha = 0.01$ level with $r = 4$ and $n-p = 6$ degrees of freedom. Moreover, this result is reinforced by the high value of the multiple correlation coefficient, 0.943. In particular, the analysis introduces only one independent variable into the regression. This variable is the committed manpower of North Vietnam which is significant at the $\alpha = 0.01$ level with 6 degrees of freedom while reducing 88.9% of the sum of squares by its inclusion.

Inspection of the correlation matrix (see Table I), however, reveals relatively high values of correlation between the committed manpower of South Vietnam and the following independent variables -- committed manpower of the United States and the amount of U. S. economic aid. Performance of additional stepwise regressions in which these variables are forced to enter the regression reveal the significance of the committed manpower of the United States and the amount of U. S. economic aid terms at the $\alpha = 0.01$ level with t values of 4.937 and 5.139 respectively (see Table II).

B. AGRICULTURAL OUTPUT OF SOUTH VIETNAM

Analysis of the agricultural sector presents an interesting result -- the agricultural output of South Vietnam is not linearly related in a statistically significant manner to any of the independent variables. Five independent variables, the political stability of South Vietnam, committed manpower of the United States, committed manpower of North Vietnam, the amount of United States economic aid, and the South Vietnamese balance of trade, are introduced into the regression but only succeed in reducing the sum of squares by 49.1% while establishing an F value of .965 which is insignificant at the $\alpha = 0.05$ level, with $r = 6$ and $n-p = 4$ degrees of freedom. The small value of 0.389 for the coefficient of multiple correlation and the small t-values (see Table IV) confirm these results.

Poor correlation in Table III prohibited the performance of step 2 of the analysis.

TABLE I CORRELATION MATRIX FOR WAR EFFORT SECTOR

	P_{sv}	WE_{nv}	WE_{us}	NWE_{us}	WE_{sv}
P_{sv}	1.00000	-0.00665	0.24483	0.08293	-0.08193
WE_{nv}	-0.00665	1.00000	0.91741	0.90202	0.94278
WE_{us}	0.24483	0.91741	1.00000	0.95392	0.85457
NWE_{us}	0.08293	0.90202	0.95392	1.00000	0.86363
WE_{us}	-0.08193	0.94278	0.85457	0.86363	1.00000

TABLE II t-VALUES FOR WAR EFFORT SECTOR

VARIABLE	COMPUTED t-VALUE		DEGREES OF FREEDOM
WE_{nv}	8.483		6
WE_{us}	4.937	(when forced into regression)	6
NWE_{us}	5.139	(when forced into regression)	6

TABLE III CORRELATION MATRIX FOR AGRICULTURAL SECTOR

	P_{sv}	WE_{nv}	WE_{us}	NWE_{us}	L_{sv}	BT_{sv}	A_{sv}
P_{sv}	1.00000	-0.00665	0.24483	0.08293	-0.22136	-0.20251	-0.51182
WE_{nv}	-0.00665	1.00000	0.91741	0.90202	-0.56545	-0.92157	0.26953
WE_{us}	0.24483	0.91741	1.00000	0.95392	-0.62174	-0.97764	0.09648
NWE_{us}	0.08293	0.90202	0.95392	1.00000	-0.64791	-0.92819	0.25718
L_{sv}	-0.22136	-0.56545	-0.62174	-0.64791	1.00000	0.53890	-0.04197
BT_{sv}	-0.20251	-0.92157	-0.97764	-0.92819	0.53890	1.00000	-0.15270
A_{sv}	-0.51182	0.26953	0.09648	0.25718	-0.04197	-0.15270	1.00000

TABLE IV t-VALUES FOR AGRICULTURAL SECTOR

VARIABLE	COMPUTED t-VALUE	DEGREES OF FREEDOM
P_{sv}	-0.385	4
WE_{nv}	0.453	4
WE_{us}	-1.152	4
NWE_{us}	1.133	4
BT_{sv}	-0.652	4

C. INDUSTRIAL OUTPUT OF SOUTH VIETNAM

Analysis of the industrial sector results in an F value of 13.510 which is significant at the $\alpha = 0.05$ level with $r = 5$ and $n-p = 5$ degrees of freedom. This indicates the existence of a linear relationship between the industrial output of South Vietnam and at least one of the following independent variables -- the political stability of South Vietnam, the committed manpower of the United States, the committed manpower of North Vietnam, the amount of United States economic aid, and the South Vietnamese balance of trade. In addition, this result is confirmed by the relatively high value of the multiple correlation coefficient, 0.864. In particular, the analysis introduces two variables into the regression, the political stability of South Vietnam and the committed manpower of North Vietnam with t values of -3.076 and 4.170 respectively. The committed manpower of North Vietnam is significant at the $\alpha = 0.01$ level whereas the political stability of South Vietnam is significant at the $\alpha = 0.05$ level. Together, the inclusion of these two variables succeeds in reducing 77.2% of the sum of squares.

Although the values obtained in the correlation matrix (see Table V) do not appear indicative of significant relationships between the industrial output and the remaining independent variables, the second stage of analysis is performed to force the amount of United States economic aid term into the regression. When this is performed, the results (see Table VI) indicate the establishment of a significant linear

TABLE V CORRELATION MATRIX FOR THE INDUSTRIAL SECTOR

	P_{sv}	WE_{nv}	WE_{us}	NWE_{us}	BT_{sv}	I_{sv}
P_{sv}	1.00000	-0.00665	0.24483	0.08293	-0.20251	-0.52445
WE_{nv}	-0.00665	1.00000	0.91741	0.90202	-0.92157	0.70811
WE_{us}	0.24483	0.91741	1.00000	0.95392	-0.97763	0.51246
NWE_{us}	0.08293	0.90202	0.95392	1.00000	-0.92819	0.62337
BT_{sv}	-0.20251	-0.92157	-0.97763	-0.92819	1.00000	-0.44399
I_{sv}	-0.52445	0.70811	0.51245	0.62337	-0.44399	1.00000

TABLE VI t-VALUES FOR INDUSTRIAL SECTOR

VARIABLE	COMPUTED t-VALUE	DEGREES OF FREEDOM
P_{sv}	-3.076	5
WE_{nv}	4.170	5
NWE_{us}	2.392 (when forced into the regression)	5

relationship between the industrial output and the amount of United States economic aid at the $\alpha = 0.05$ level. Attempts to force other variables into the regression fail to establish significant linear relationships.

D. TRANSPORTATION CAPACITY OF SOUTH VIETNAM

The analysis of the transportation sector reveals a linear relationship between the transportation capacity of South Vietnam and the committed manpower of North Vietnam. The F value of 11.170 is significant at the $\alpha = 0.05$ level with $r = 4$ and $n-p = 6$ degrees of freedom and is confirmed by a relatively high value of 0.885 for the multiple correlation coefficient. In particular, the committed manpower of North Vietnam with a computed t-value of 5.646 is significant at the $\alpha = 0.01$ level.

Inspection of the correlation matrix (see Table VII), however, reveals relatively high values of correlation between the transportation capacity and the committed manpower of the United States and the amount of United States economic aid. Therefore, the second stage of analysis is performed to investigate whether a statistically significant linear relationship exists between the transportation capacity of South Vietnam and these terms. The results of forcing these two independent variables into the regression in separate regression analyses (see Table VIII) indicates that both the committed manpower of the United States and the amount of United States economic aid are significant at the $\alpha = 0.01$ level.

TABLE VII CORRELATION MATRIX FOR THE TRANSPORTATION SECTOR

	P_{sv}	WE_{nv}	WE_{us}	NWE_{us}	T_{sv}
P_{sv}	1.00000	-0.00665	0.24483	0.08293	-0.00141
WE_{nv}	-0.00665	1.00000	0.91741	0.90202	0.88308
WE_{us}	0.24483	0.91741	1.00000	0.95392	0.87848
NWE_{us}	0.08293	0.90202	0.95392	1.00000	0.86852
T_{sv}	-0.00141	0.88308	0.87848	0.86852	1.00000

TABLE VIII t-VALUES FOR TRANSPORTATION SECTOR

VARIABLE	COMPUTED t-VALUE	DEGREES OF FREEDOM
WE_{nv}	5.646	6
WE_{us}	6.069	6
NWE_{us}	5.257	6

E. NON-DEFENSE GOVERNMENTAL EXPENDITURES OF SOUTH VIETNAM

Results obtained from the analysis of the non-defense government services sector indicate the existence of a significant linear relationship between this sector and at least one of three independent variables--the committed manpower of the United States, the committed manpower of North Vietnam, and the amount of United States economic aid. The computed F value of 14.207 is significant at the $\alpha = 0.01$ level with $r = 4$ and $n-p = 6$ degrees of freedom. This statistical significance is supported by the relatively high value of 0.908 for the multiple correlation coefficient. In particular, the analysis introduces the aforementioned independent variables into the regression and accounts for 85.9% of the sum of squares. Of these three variables, t values reveal (see Table X) that only the committed manpower of the United States is significant at the $\alpha = 0.01$ level in the first step of the analysis.

However, inspection of the correlation matrix (see Table IX) reveals relatively high degrees of correlation between the transportation capacity and the committed manpower of North Vietnam and the amount of United States economic aid. For this reason, the second stage of the analysis is performed forcing these independent variables into separate regression analyses. The results (see Table X) indicate the establishment of significant linear relationships at the $\alpha = 0.01$ level between the transportation capacity and the committed manpower of North Vietnam and the amount of United States economic aid respectively.

TABLE IX CORRELATION MATRIX FOR NON-DEFENSE GOVERNMENT EXPENDITURES SECTOR

	P_{sv}	WE_{nv}	WE_{us}	NWE_{us}	S_{sv}
P_{sv}	1.00000	-0.00665	0.24483	0.08293	0.19801
WE_{nv}	-0.00665	1.00000	0.91741	0.90202	0.88877
WE_{us}	0.24483	0.91741	1.00000	0.95382	0.90841
NWE_{us}	0.08293	0.90202	0.95392	1.00000	0.84091
S_{sv}	0.19801	0.88877	0.90841	0.84091	1.00000

TABLE X t-VALUES FOR NON-DEFENSE GOVERNMENT EXPENDITURES SECTOR

VARIABLE	COMPUTED t-VALUE	DEGREES OF FREEDOM
WE_{us}	6.518	6
WE_{nv}	5.817	6
NWE_{us}	4.163	6

VIII. CONCLUSIONS AND EXTENSIONS

The aforementioned results indicate the existence of linear relationships between dependent variables representing the sectors of the South Vietnamese economy and particular independent political and economic variables. Whereas regression analysis maintains a form of predictive ability, the results are not interpreted for that purpose. To attempt accurate predictions on such a complex subject as the effect of war on an economy using the hindsight of historical data would appear unsupportable at best. Therefore, the results are interpreted merely to establish the existence of relationships between the economic sectors of South Vietnam and specific variables of importance in order to ascertain if the economy has been affected by these variables. The above results permit the following conclusions:

A. WAR EFFORT OF SOUTH VIETNAM

Whereas the initial analysis includes only one term in the regression (the committed manpower of North Vietnam), it is apparent that a strong relationship exists between the committed manpower of South Vietnam and the committed manpower of North Vietnam. This result seems quite logical and lends support to the belief that military escalation by one opponent leads to increased escalation by the other. In particular, this study demonstrates that the enlargement of the South Vietnamese war effort is affected in a statistically significant manner

by the buildup of Communist forces in the South. It also demonstrates that linear relationships exist between the committed manpower of South Vietnam and the committed manpower of the United States and the amount of United States economic aid. In retrospect, the existence of these relationships is considered as support for the tenet that the enlargement of the war effort of South Vietnam would not have been as great without the massive amount of U. S. aid in terms of both personnel and dollars.

Finally, this study suggests that the political stability of South Vietnam as defined in this study may not be a significant contributing factor to the enlargement of the war effort. This is interpreted as implying that the war effort of South Vietnam is primarily affected by the large scale United States presence and the need to counteract the war effort of North Vietnam.

B. AGRICULTURAL OUTPUT OF SOUTH VIETNAM

Results of the analysis of the agricultural sector indicate that the agricultural production of South Vietnam is linearly unrelated to the variables under investigation. This is interpreted as implying that although the output of specific crops has declined, resulting in some importation, that in general agriculture is able to maintain a fairly stable level of production. Although the war efforts of North Vietnam and the United States are highly suspect as being detrimental to agricultural production, these suspicions are statistically unconfirmed. Of particular interest, however, is the lack of a relationship between agricultural production

and the amount of United States supplied economic aid. This is interpreted as support of the fact that much of the United States aid has been military and consumer oriented. Continued lack of substantial aid for agriculture on the part of the United States may have serious future consequences on this predominant sector of the South Vietnamese economy. Furthermore, the lack of any statistically significant relationship between the agricultural production and the political stability of the government is interpreted as providing an insight into the relationship of Saigon to the rural populace. That the agricultural production remains statistically unaffected by the oftentimes chaotic political events occurring in Saigon suggests that in a like manner the average South Vietnamese farmer remains economically unaffected.

C. INDUSTRIAL OUTPUT OF SOUTH VIETNAM

Analysis of the industrial sector of the economy shows that a statistically significant relationship exists between the industrial output of South Vietnam and three independent variables -- the political stability of the government, the war effort of North Vietnam, and the amount of United States supplied economic aid.

The establishment of a linear relationship between the industrial output and the war effort of North Vietnam and the political stability of the government is of particular interest because of the nature of the relationship. The results of the analysis indicate that as the political situation deteriorates and the war effort of North Vietnam increases,

the industrial output improves. This relationship is interpreted as indicating that the conflict has in general no serious detrimental effects on South Vietnam's fledgling industry during the years of this study. Whether this is related to the infantile nature of South Vietnam's industrial development is unconfirmed. Although the conflict may have prevented rapid industrial advances, at least complete industrial progress was not brought to a halt. This result, however, demonstrates once again the ability of the economy to operate without benefit of a politically favorable atmosphere.

This ability is even more noticeable when the variable representing the amount of United States supplied economic aid is forced into the regression. The resultant of this analysis indicates the existence of a linear relationship between industrial output and the amount of United States economic aid and the political stability of South Vietnam. Again the results indicate that as the political situation deteriorates and the amount of United States supplied economic aid increases, the industrial output improves. Thus, it appears that the amount of United States economic aid has a more contributing effect on this sector of the economy than the stability of the government.

D. TRANSPORTATION CAPACITY OF SOUTH VIETNAM

The regression analysis performed on the transportation sector clearly indicates the existence of statistically significant relationships between the transportation capacity of South Vietnam and the war efforts

of North Vietnam and the United States and the amount of United States supplied economic aid. The interpretation of these results is that in general the transportation capacity of South Vietnam as defined in this paper has increased markedly as a result of the conflict. The escalation of the war by North Vietnam and the United States, coupled with increased United States economic aid, has greatly increased the transportation capacity of South Vietnam. In particular, since the data used for the transportation capacity includes both civilian and military motor vehicles, these results illustrate the impact of military escalation on this sector of the economy. These results support the beliefs of Lilienthal[13] and Dacy[14] who feel that a much improved internal transportation capacity will be available in postwar Vietnam if a successful transition from military to civilian use can be accomplished.

E. GOVERNMENTAL NON-DEFENSE EXPENDITURES

The results obtained from the analysis of the governmental non-defense services sector clearly indicate the existence of linear relationships between the amount of governmental non-defense expenditures and the following independent variables -- the committed manpower of North Vietnam, the committed manpower of the United States, and the amount of United States economic aid. Quite logically the nature of

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[13] Lilienthal, p. 325-326.

[14] Dacy, D. C., Availability of Goods in South Vietnam from 1964 through 1967, p. 10-12, Institute for Defense Analyses, 1969.

these relationships indicates that the war effort of North Vietnam has a positive effect on the need for the South Vietnamese government to provide increased social services. This is anticipated because throughout the period of this study an escalation of the conflict by the North Vietnamese only served to increase the hardships of the populace and thereby enlarge the role of the government with respect to services of this type. Interestingly, the war effort of the United States and the amount of United States supplied economic aid also increased and are logically interpreted as indicating support for the government both militarily and in its role of supplying services such as improved medical care, education, housing, and relief for war refugees.

F. GENERAL COMMENTS AND EXTENSIONS

The nature and results of these effects suggest the large-scale dependence of the Vietnamese economy on the military conflict and the presence of the United States in Southeast Asia. The removal of either of these two forces may have even more significant and lasting effects on the economy than their presence. It is with this knowledge that steps should be taken to promote the economy of South Vietnam and to develop a self-supporting nation capable of providing political and economic leadership to Southeast Asia.

In this thesis the effects of the war and other political and economic variables on the South Vietnamese economy have been established at the cost of some simplification. The author does not

imply, however, any deficiency in the mathematical model. Further investigation of the South Vietnamese economy using this type of a model is strongly encouraged. However, it is felt that future research should restrict itself to a detailed study of an individual economic sector rather than attempt to analyze the entire economy. Detailed analysis of a specific sector, notably agriculture, would prove of considerable value in determining the future role of specific crops such as rice and rubber in the South Vietnamese economy.

APPENDIX A

Growth of the Army of the Republic of South Vietnam

As cited in reference 10, these figures were related to the Senate Committee on Foreign Relations by Secretary of State William P. Rogers and Secretary of Defense Melvin R. Laird.

Year	troop strength in thousands
1957	112.3
1958	119.7
1959	126.3
1960	138.2
1961	165.8
1962	197.8
1963	192.1
1964	220.4
1965	267.9
1966	284.0
1967	302.8

APPENDIX B

Politically Significant Events in South Vietnam, 1957-1967

The following politically significant events occurred in the period 1957 through 1967 and were determined from analysis of reference 16. The values preceding the date of the event signify either an event that strengthened the government of South Vietnam (+1.0) or an event that weakened the government of South Vietnam (-1.0). The total represents the algebraic sum of these values and is indicative of the annual stability of the South Vietnamese government.

1957:

-1.0	Feb. 23	unsuccessful assassination attempt on President Ngo Dinh Diem.
+1.0	Feb. 24	National Bank of South Vietnam claims that country is physically secure for the first time in fifteen years.
0.0 TOTAL		

1958:

+1.0	Mar. 1	President Ngo Dinh Diem reports approval for twelve industrial projects in a drive to spur economic development.
-1.0	Mar. 23	President Ngo Dinh Diem reports mounting Communist-inspired terrorist activities.
0.0 TOTAL		

1959:

-1.0	July 7	the press expresses concern over mounting terrorist activities.
+1.0	July 12	30,000 stage anti-Communist rally at Bienhoa following terrorist attacks.
+1.0	Sept. 6	President Diem's party wins majority of seats in the new Parliament.
+1.0 TOTAL		

1960:

-1.0	April 17	South Vietnamese press reports an increase of Communist terrorism.
-1.0	May 1	eighteen South Vietnamese notables, including ten ex-Ministers ask President Diem to liberalize his regime.
-1.0	Nov. 13	five battalions of troops under the leadership of Col. Nguyen Chanh Thi stage a bloody predawn uprising; they claim Diem's ouster.
-1.0	Nov. 13	loyal South Vietnamese troops are called to Saigon.
+1.0	Nov. 14	President Diem proclaims an end to the coup attempt.
-1.0	Nov. 16	Communist activities increase in the wake of the unsuccessful coup attempt.
-1.0	Nov. 22	non-Communist opposition grows against Diem's dictatorial powers and reported family profiteering.
-5.0 TOTAL		

1961:

-1.0	Mar. 31	Communists openly threaten villagers who vote for Diem in forthcoming elections.
-1.0	Apr. 7	Saigon press reports increased pre-election Communist led terrorism.
+1.0	Apr. 10	President Diem and Vice-President Nguyen Ngoc Tho re-elected with 78% of the vote.
-1.0	Oct. 19	President Diem orders a national state of emergency over rising terrorist activities.
+1.0	Nov. 17	United States confirms accords to send increased military aid and initial U.S. military advisors.
-1.0	Dec. 10	President Diem under U. S. pressure begins governmental reforms in politically tense Saigon.
-1.0	Dec. 23	Dr. Pham Huy Co, titular leader of the Free Democratic Party, charges widespread government corruption.
-3.0 TOTAL		

1962:

-1.0	Feb. 27	two military planes, flown by dissident airmen, bomb and strafe the Presidential Palace.
-1.0	Mar. 1	Assembly committee reports widespread Air Force support for bombing of Presidential Palace.
+1.0	Mar. 5	Air Force stages loyalty demonstration.
+1.0	May 17	many military officers, civilians, and opposition politicians arrested after Diem directed investigation of February bombing incident.
-1.0	Aug. 12	austere security measures in effect in Saigon following press reports of hinted military coup.
-1.0	Aug. 17	Saigon press reports growing black market following increased Communist insurgent activities.
-2.0	TOTAL	

1963:

-1.0	May 10	seven Buddhist demonstrators killed in Hue riots when police break up demonstration against Diem's orders barring flying of flags and processions on Buddha's birthday.
-1.0	May 22	over 500 Buddhists parade in Saigon to condemn Hue incident.
-1.0	May 31	government tension increases following Buddhist protest for religious equality in front of the National Assembly.
-1.0	June 5	large Buddhist demonstrations in Hue halted after troops use tear gas.
-1.0	June 9	Mrs. Ngo Dinh Nhu labels Buddhists as Communist dupes.
-1.0	June 16	10,000 Buddhists clash with police in Saigon.
-1.0	July 3	reported rumors of a military coup.
+1.0	July 10	President Kennedy in a personal message to Diem confirms U. S. support for his government.
-1.0	July 17	police clash with Buddhists in Saigon in most violent demonstration of current crisis.
+1.0	July 24	ARVN veterans stage pro-government rally in Saigon.
-1.0	July 31	60,000 Buddhists stage nation-wide demonstrations.

-1.0	Aug. 12	5,000 Buddhists demonstrate in Saigon calling for religious equality.
-1.0	Aug. 13	Catholics in Saigon claim that Diem is authoritarian.
-1.0	Aug. 16	Hue and Nha Trang placed under martial law following Buddhist immolations.
-1.0	Aug. 18	47 Hue University faculty members resign and call for Diem's ouster.
-1.0	Aug. 21	police invade Buddhist pagodas in Saigon and arrest 100 Buddhist monks.
-1.0	Aug. 22	Diem orders nation placed under martial law.
-1.0	Aug. 22	U. S. charges that government is failing to seek reconciliation with Buddhists.
-1.0	Aug. 23	continuation of mass arrests of Buddhists and opposition political leaders.
-1.0	Aug. 24	anti-U. S. and student unrest increases.
-1.0	Aug. 25	Diem shuts Saigon University and all public and private secondary schools.
-1.0	Aug. 26	over 600 students arrested in Saigon.
-1.0	Aug. 28	Cambodia severs diplomatic ties over government policy towards Buddhists.
+1.0	Sept. 1	30,000-40,000 attend pro-government rallies in Saigon.
-1.0	Sept. 7	government arrests 800 high school students during protest demonstration in Saigon.
-1.0	Sept. 10	1,000 high school students arrested in Cholon section of Saigon after anti-government demonstrations.
-1.0	Sept. 12	U. S. Ambassador Lodge tells Diem that Ngo Dinh Nhu must be relieved as Chief of State.
-1.0	Sept. 15	government rushes troops to Saigon against threatened student demonstrations.
+1.0	Sept. 17	troops maintain control of Saigon.
-1.0	Oct. 8	U. S. quietly suspends aid in form of commercial exports as protest against Nhu's government position.

-1.0	Nov. 2	government falls in quick military coup.
+1.0	Nov. 2	U. S. welcomes coup under leadership of Gen. Duong Van Minh.
-1.0	Nov. 3	President Diem and Chief of State Nhu reported murdered.
-1.0	Nov. 3	over internal protest coups leaders appoint Nguyen Ngoc Tho as Premier.
+1.0	Nov. 8	U. S. recognizes the new regime.
+1.0	Nov. 8	government lifts curfew and censorship of radio and press.

-22.0 TOTAL

1964:

+1.0	Jan. 17	government closes 9 newspapers in Saigon, charging violation of internal security.
-1.0	Jan. 30	Minh is overthrown by Maj. Gen Nguyen Khanh; aim of coup is to ban South Vietnam's neutralization.
-1.0	Feb. 5	1,000 students demonstrate in Saigon for return of Duong Van Minh.
-1.0	Mar. 2	Khanh reveals a French-led plot to assassinate him.
+1.0	Mar. 23	Military Revolutionary Council unanimously votes confidence in Khanh.
-1.0	May 5	Saigon taxi drivers threaten demonstrations against U. S. involvement after U. S. personnel linked to murder of a taxi driver.
+1.0	May 17	Khanh grants full religious freedom for the Buddhists.
+1.0	May 28	Khanh frees 686 political prisoners.
-1.0	June 8	35,000 Catholics demonstrate against government favoritism for Buddhists.
-1.0	July 21	students lead anti-French demonstrations in Saigon.
-1.0	Aug. 9	students surround Khanh's car in Hue demanding Buddhist rights.
+1.0	Aug. 17	Khanh officially elected President by the Military Revolutionary Council.

-1.0	Aug. 22	several hundred students denounce Khanh's dictatorship.
-1.0	Aug. 23	2,000 students lead anti-government demonstration in Saigon.
-1.0	Aug. 25	anti-government demonstrations erupt in major cities.
-1.0	Aug. 26	Military Revolutionary Council withdraws constitution says it will elect a new head of state and then disband.
-1.0	Aug. 27	Khanh reports the failure of the Council to elect a new head of state.
-1.0	Aug. 27	Buddhists riot against Catholics in major cities.
+1.0	Aug. 28	triumvirate of Minh, Khanh, and Tran Thien Khiem formed; Khanh is appointed caretaker premier at U. S. insistence.
-1.0	Aug. 28	severe rioting occurs against the government in Saigon.
-1.0	Aug. 29	Nguyen Xuan Oanh named acting premier for two months; Khanh has reportedly suffered a complete physical and mental breakdown.
+1.0	Sept. 2	Khanh returns as premier; students pledge support for the triumvirate.
-1.0	Sept. 2	Nguyen Ton Hoan, Dai Viet leader, resigns as First Deputy Premier claiming that he can't work with Khanh.
+1.0	Sept. 4	Khanh dissolves the triumvirate; Minh becomes the new Chief of State.
+1.0	Sept. 10	Khanh lifts press censorship.
-1.0	Sept. 11	Brig. Gen Lam Van Phat leads a bloodless coup in Saigon.
+1.0	Sept. 14	forces loyal to Khanh regain control of the government.
+1.0	Sept. 19	Khanh institutes sweeping military changes in the command structure.
-1.0	Oct. 2	rumors abound of large scale anti-government demonstrations.
+1.0	Oct. 21	National High Council ordered into effect to draw up a new Constitution.

+1.0	Oct. 25	Council elects elder statesman Phan Khac Suu as Chief of State after rejecting Minh.
-1.0	Oct. 26	Khanh resigns as Premier.
+1.0	Oct. 30	Suu names Tran Van Huong as Premier.
-1.0	Nov. 6	Council Chairman, Nguyen Xuan Chu resigns, critical of the new civilian government.
-1.0	Nov. 23	thousands riot against the Huong government.
-1.0	Nov. 27	Huong declares national state of emergency.
-1.0	Dec. 20	armed forces purge the National High Council.
+1.0	Dec. 28	Suu and Huong protest military intervention in government affairs.
-8.0 TOTAL		

1965:

-1.0	Jan. 4	thousands of anti-government demonstrators clash with police in Saigon.
-1.0	Jan. 9	1,000 students demonstrate against the government in Saigon.
+1.0	Jan. 10	military leaders agree to restore Huong's civilian government.
-1.0	Jan. 12	major cities paralyzed by a general strike called by Buddhists.
-1.0	Jan. 15	Buddhists lead anti-government demonstrations in major cities.
-1.0	Jan. 18	2,000 demonstrate in Hue demanding Huong's ouster.
-1.0	Jan 23.	Buddhists attack U. S. I. S. library in Saigon.
-1.0	Jan. 24	Buddhists attack U. S. I. S. library in Hue.
-1.0	Jan. 25	2,000 demonstrate against the government in Hue.
-1.0	Jan. 26	15,000 Buddhist sympathizers protest in Hue.
+1.0	Jan. 27	Armed Forces Council ousts Huong and Suu; Khanh becomes the new Chief of State.
+1.0	Jan. 28	Buddhist pledge support for Khanh.
+1.0	Feb. 16	Phan Huy Quat appointed as new Premier.
-1.0	Feb. 16	anti-government demonstrators clash with troops in Saigon.

-1.0	Feb. 19	Marine and ARVN units overthrow Khanh; Lt. Gen. Tran Thiem Khiem takes over as Chief of State.
+1.0	Feb. 20	forces loyal to Khanh regain control and call on the dissidents to surrender.
-1.0	Feb. 21	Armed Forces Council ousts Khanh.
+1.0	Feb. 22	Tran Van Minh replaces Khanh as Chief of State.
-1.0	Apr. 9	rumors of a Navy coup attempt following Saigon meeting against Radm. Chung Ton Cong.
-1.0	May 7	Armed Forces Council disbands.
-1.0	June 4	Catholics demonstrate against the government in Saigon.
+1.0	June 12	military coup ousts Quat as Premier under the leadership of Nguyen Van Thieu.
+1.0	June 19	Nguyen Cao Ky named as Premier; National Leadership Committee established with Thieu as Chairman.
-1.0	Oct. 15	3,000 demonstrate in Hue demanding Thieu's ouster.
+1.0	Nov. 28	Catholics demonstrate in Saigon in support of the government.
-7.0 TOTAL		

1966:

+1.0	Jan. 16	Ky promises a new Constitution and national elections in 1967.
-1.0	Jan. 19	reports in Saigon of a rumored coup attempt.
-1.0	Mar. 17	thousands of Buddhists demonstrate against the government in Saigon.
+1.0	Mar. 20	Buddhists' leaders affirm support for the government.
+1.0	Mar. 26	Ky pledges a new Constitution within two months.
-1.0	Mar. 26	anti-government student led demonstrations in Saigon.
-1.0	Mar. 27	demonstrations erupt in Hue.
-1.0	Apr. 2	10,000 demonstrate against the government in Danang.
-1.0	Apr. 3	3,000 troops revolt against the government in Hue.

-1.0	Apr. 4	3,000 students demonstrate against the government in Hue.
-1.0	Apr. 10	anti-government, Buddhist military junta formed.
+1.0	Apr. 15	Ky concedes to Buddhist demands and pledges national elections in 3-5 months.
+1.0	Apr. 15	20,000 Buddhists hold pro-government rally in Hue.
+1.0	Apr. 16	Ky promises national elections on August 15.
-1.0	Apr. 16	2,000 hold anti-government protest in Danang.
+1.0	Apr. 16	3,000 Catholics hold a pro-government rally in Saigon.
+1.0	Apr. 18	Buddhists pledge support for Ky until elections.
-1.0	May 1	5,000 hold anti-U. S. rally in Saigon.
+1.0	May 7	Ky states intention of remaining in power for another year.
+1.0	May 14	pro-government troops defeat anti-government troops and Buddhists in Saigon battle.
-1.0	May 16	3,000 anti-government demonstrators protest in Hue.
-1.0	May 16	50,000 hold an anti-government strike in Saigon.
-1.0	May 19	anti-government demonstrations are held under Buddhist leadership in Hue.
-1.0	May 20	500 Buddhists demonstrate against the government in Saigon.
+1.0	May 22	government troops capture Buddhist pagoda in Danang.
-1.0	May 23	government troops battle dissidents in Danang.
+1.0	May 24	rebels in Danang surrender to government troops.
-1.0	May 24	1,000 students hold anti-government demonstration in Hue.
-1.0	May 26	Buddhists and students sack and burn the U. S. cultural center in Hue.
-1.0	May 27	2,000 Buddhists demonstrate against U. S. involvement in Saigon.
-1.0	May 29	20,000 demonstrate against the government in Saigon.

-1.0	June 1	1,000 students burn the U. S. consulate in Hue.
+1.0	June 2	Ky government adds 10 civilian members.
-1.0	June 2	5,000 Buddhists hold anti-U. S. demonstration in Hue.
+1.0	June 10	government troops control Buddhists in Hue rally.
+1.0	June 12	15,000 hold a pro-U. S. rally in Saigon.
-1.0	June 12	5,000 hold an anti-government demonstration in Hue.
-1.0	June 15	Buddhists hold anti-government demonstration in Saigon.
-1.0	June 17	press reports on the influence of the Hue, Buddhists element.
-1.0	June 18	South Vietnam forced to devaluate the currency.
+1.0	June 20	government places Hue under martial law.
+1.0	Aug. 27	election preparations occurring smoothly.
+1.0	Sept. 12	81% vote in elections for a Constituent Assembly.
-7.0 TOTAL		

1967:

+1.0	July 20	government discontinues censorship of political news.
+1.0	Sept. 4	Nguyen Van Thieu and Nguyen Cao Ky win election receiving 27% of the total vote.
-1.0	Sept. 16	state of emergency decreed in Danang to avert Buddhist anti-government demonstrations.
-1.0	Sept. 30	Buddhists hold large anti-government rally in Danang.
+1.0	Oct. 1	government ban enforced against political demonstrations in Saigon.
+1.0	Oct. 3	Constituent Assembly votes to confirm election of Thieu and Ky.
+1.0	Oct. 29	Buddhist demonstration successfully halted in Saigon.
+1.0	Oct. 31	Thieu inaugurated in incident free ceremony.
+1.0	Nov. 5	Thieu recognizes the legality of moderate Buddhists.
+1.0	Nov. 28	Buddhists pledge cooperation with the Thieu regime.
+6.0 TOTAL		

APPENDIX C

Year End Estimates of the War Effort of North Vietnam

The following data of year end operating North Vietnamese and Viet Cong Forces was obtained from reference 10.

year	troop commitment in thousands
1957	3.0
1958	3.0
1959	3.0
1960	6.0
1961	20.0
1962	40.0
1963	60.0
1964	80.0
1965	238.0
1966	280.0
1967	250.0

APPENDIX D

Year End Estimates of the War Effort of the United States

The following data was obtained from reference 23.

year	troop commitment in thousands
1957	0.0
1958	0.0
1959	0.0
1960	0.7
1961	3.1
1962	14.5
1963	16.3
1964	23.3
1965	185.3
1966	385.3
1967	485.6

APPENDIX E

United States Economic Aid to South Vietnam, 1957-1967

This data was relayed to the Senate Committee on Foreign Relations by Secretary of State William P. Rogers and Secretary of Defense Melvin R. Laird, as cited in reference 10.

year	millions of U. S. dollars
1957	82.9
1958	29.0
1959	129.2
1960	115.4
1961	146.6
1962	146.0
1963	188.6
1964	220.5
1965	273.2
1966	745.1
1967	656.8

APPENDIX F

Agricultural Output of South Vietnam, 1957-1967

This data was obtained by converting the existing data in references 20, 21, 26, and 27 to monetary values using the existing prices listed in reference 22.

year	value in millions of U. S. dollars
1957	457.8
1958	540.6
1959	641.5
1960	614.2
1961	661.9
1962	704.5
1963	733.5
1964	794.3
1965	658.4
1966	672.2
1967	643.5

APPENDIX G

Arable Land in South Vietnam, 1957-1967

The following information was obtained from reference 21.

year	arable land in millions of hectares
1957	3.0
1958	3.3
1959	2.9
1960	2.9
1961	2.9
1962	3.1
1963	3.1
1964	3.1
1965	2.9
1966	2.8
1967	2.8

APPENDIX H

South Vietnamese Balance of Trade, 1957-1967

The following information was obtained from reference 21.

year	balance of trade in millions of U. S. dollars
1957	-208.0
1958	-177.0
1959	-150.0
1960	-154.0
1961	-184.0
1962	-208.0
1963	-209.0
1964	-249.0
1965	-321.0
1966	-420.0
1967	-522.0

APPENDIX I

South Vietnamese Industrial Output, 1957-1967

This data was obtained by converting the existing data in references 20, 21, 26, and 27 to monetary values using the existing prices listed in reference 24.

year	S. V. industrial output in millions of U.S. dollars
1957	2.1
1958	3.8
1959	9.7
1960	29.4
1961	32.7
1962	31.0
1963	44.7
1964	40.3
1965	47.7
1966	51.0
1967	37.7

APPENDIX J

The Transportation Capacity of South Vietnam, 1957-1967

The following information was obtained from reference 21.

year	thousands of motor vehicles, public and private
1957	43.0
1958	50.4
1959	52.9
1960	44.6
1961	45.6
1962	55.2
1963	57.7
1964	57.0
1965	61.0
1966	68.0
1967	73.7

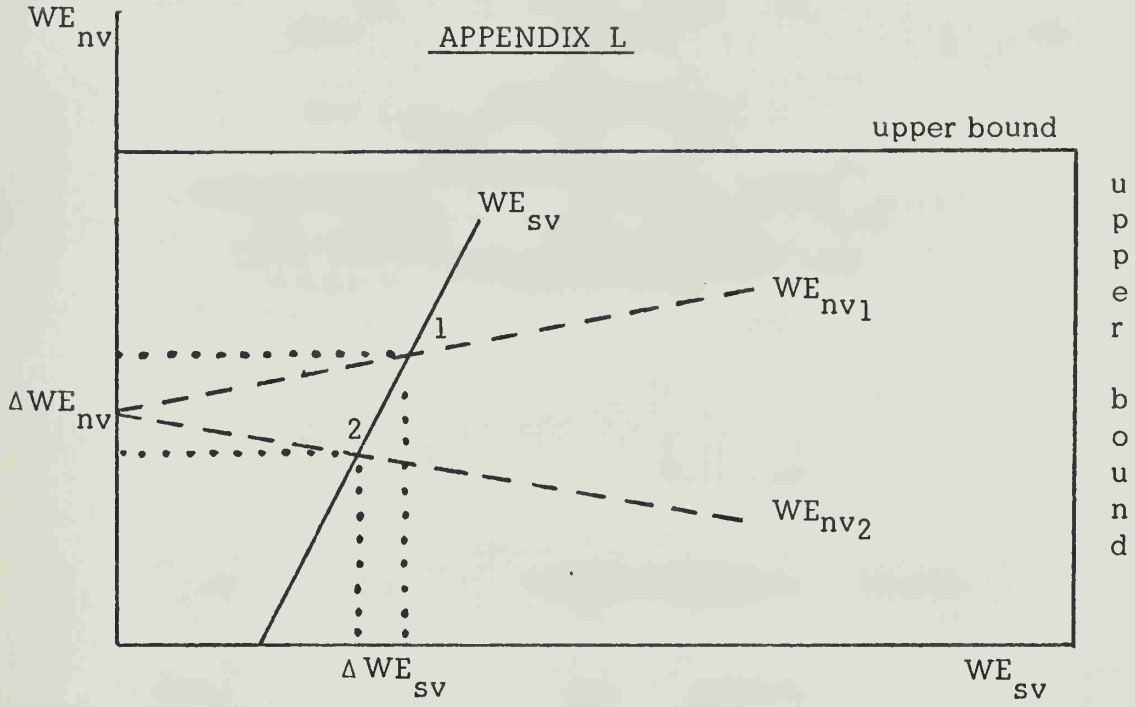
APPENDIX K

South Vietnamese Non-defense Government Expenditures, 1957-1967

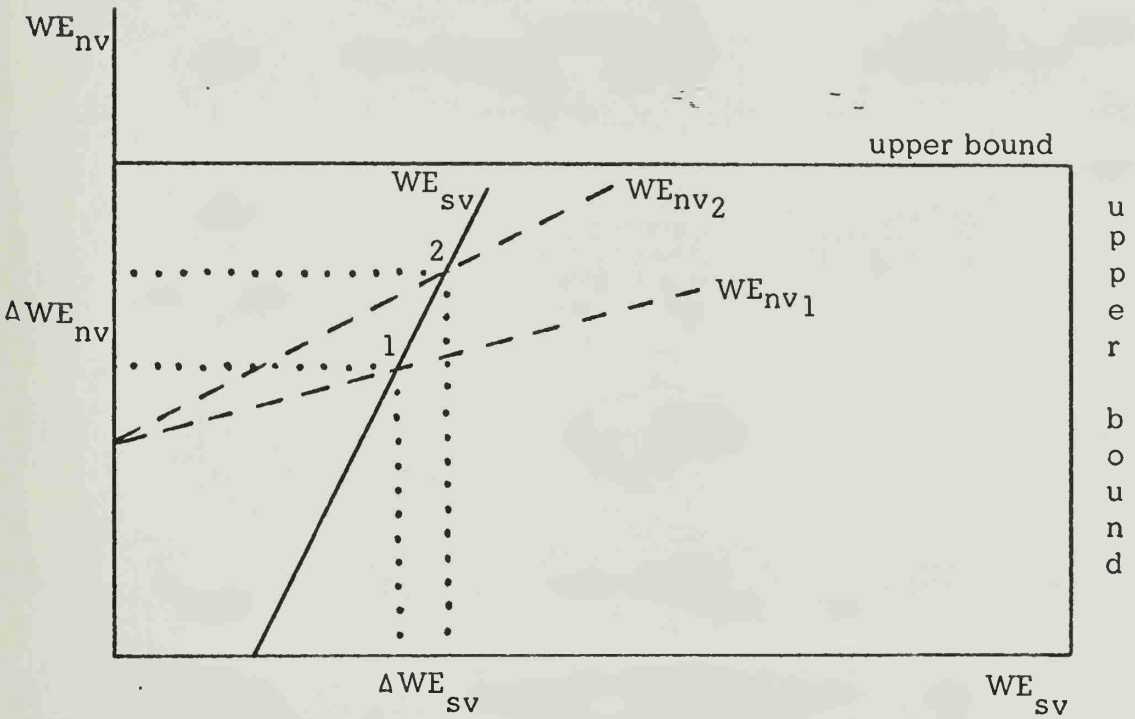
The following information was obtained from reference 27.

year	value in billions of piastres
1957	4.9
1958	5.2
1959	5.4
1960	7.9
1961	4.4
1962	6.1
1963	6.8
1964	18.2
1965	21.6
1966	21.7
1967	35.9

APPENDIX L



unilateral N. V. deescalation



unilateral N. V. escalation

BIBLIOGRAPHY

1. Adler, John H., Absorptive Capacity, The Concept and its Determinants, p. 23-32, Brookings Institution, 1965.

2. Annual Report of the Secretary of Defense, 1967 p. 322, U. S. Government Printing Office, 1968.

3. Boulding, K. E., "The Parameters of Politics," University of Illinois Bulletin, p. 12, University of Illinois, July, 1966.

4. "U. S. Winning a Battle on Vietnam Economy," Business Week, pp. 30-32, December 4, 1965.

5. "Vietnam's Other War," Business Week, pp. 99-115, September 23, 1967.

6. "The Other War for U. S. Bankers," Business Week, pp. 82-86, October 14, 1967.

7. Faltermayer, E. K., "The Surprising Assets of South Vietnam's Economy," Fortune, pp. 83-94, March, 1966.

8. Fisher, Charles A., South-East Asia, A Social, Economic, and Political Geography, pp. 314-402, E. P. Dutton and Co., 1964.

9. Haviland, H. F., Jr., Vietnam After the War: Peacekeeping and Rehabilitation, pp. 8-26, Brookings Institution, 1968.

10. Hearings Before the Committee on Foreign Relations, U.S. Senate, 91st Congress, 1st Session, pp. 92-115, U. S. Government Printing Office, 1970.

11. Institute for Defense Analyses, Availability of Goods in South Vietnam from 1964 through 1967, by D. C. Dacy, pp. 10-12, January, 1969.

12. Lilienthal, D. E., "Postwar Development in Vietnam," Foreign Affairs, v. 47, pp. 321-333, January, 1969.

13. Lindholm, R. W., Economic Development with Emphasis on Vietnam, pp. 132-157, University of Oregon, 1964.

14. Milstein, J. S., The Escalation of the Vietnam War, 1965-1967, A Quantitative Analysis and Predictive Computer Simulation, pp. 1-151, Ph.D. Thesis, Stanford University, 1969.

15. Mood, A. M. and Graybill, F. A., Introduction to the Theory of Statistics, pp. 353-355, McGraw-Hill, 1963.

16. New York Times Index, 1957-1967, New York Times Co., 1958-1968.

17. Ostle, B., Statistics in Research, pp. 159-190, Iowa State University Press, 1963.

18. Taylor, Milton C., "South Vietnam: Lavish Aid, Limited Progress," Pacific Affairs, v. 34, pp. 242-256, Autumn, 1961.

19. United Nations, Toward the Economic Development of the Republic of Vietnam, pp. 17-86, United Nations, 1959.

20. United Nations, United Nations Statistical Yearbook of Asia and the Far East, 1963, pp. 386, 398, 407, United Nations, 1964.

21. United Nations, United Nations Statistical Yearbook of Asia and the Far East, 1968, pp. 395, 409, 415, 446, United Nations, 1969.

22. United States Department of Agriculture, United States Agricultural Statistics, 1968, pp. 21, 82, 192, 315, 570, 607, U. S. Department of Agriculture, 1969.

23. United States Department of Commerce, Statistical Abstract of the United States, 1969, pp. 342, 371, U. S. Department of Commerce, 1969.

24. United States Department of Commerce, U. S. Business Statistics, 1968, pp. 143, 175, 181, 673, 697, U. S. Department of Commerce, 1968.

25. United States Department of State, Vietnam Information Notes, No. 7, U. S. Department of State, August, 1968.

26. Vietnam Statistical Yearbook, 1965, pp. 96, 111, 152, Bureau of Statistics, 1965.

27. Vietnam Statistical Yearbook, 1967, pp. 57, 88, 121, Bureau of Statistics, 1967.

28. Webb, E. J. and others, Unobtrusive Measures, pp. 43-47, Rand-McNally, 1966.

29. White, Ralph K., "Misperception and the Vietnam War," Journal of Social Issues, v. 22, pp. 1-164, July, 1966.

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13. ABSTRACT

This paper investigates the effect of the war on the South Vietnamese economy for the period 1957-1967. For this purpose the economy is divided into five independent sectors: the war effort, the agricultural output, the industrial output, the transportation capacity, and government non-defense expenditures. Each of these sectors is expressed as a linear function of specific political and economic variables of interest and a multiple stepwise regression analysis performed to determine the effect of these specific variables on the individual economic sectors.

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